

From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

To:

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Date of mailing ( <i>day/month/year</i> ) 28 September 2006 (28.09.2006)	
Applicant's or agent's file reference FD053-PCT	<b>IMPORTANT NOTIFICATION</b>
International application No. PCT/JP2005/001379	International filing date ( <i>day/month/year</i> ) 01 February 2005 (01.02.2005)
Applicant SUMITOMO TITANIUM CORPORATION et al	

## 1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

## 2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

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## 3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

**TRANSLATION**  
**PCT**

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference

**FD053-PCT**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.

**PCT/JP2005/001379**

International filing date (day/month/year)

**01.02.2005**

Priority date (day/month/year)

**20.02.2004**

International Patent Classification (IPC) or both national classification and IPC

Applicant

**SUMITOMO TITANIUM CORPORATION**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/IP

Authorized officer

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Telephone No.

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INTERNATIONAL SEARCHING AUTHORITY

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Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐

This opinion has been established on the basis of a translation from the original language into the following language

\_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☐

in written format

☐

in computer readable form

c. time of filing/furnishing

☐

contained in the international application as filed.

☐

filed together with the international application in computer readable form.

☐

furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
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PCT/JP2005/001379

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	2-5, 7-12	YES
	Claims	1, 6	NO
Inventive step (IS)	Claims	7-11	YES
	Claims	1-6, 12	NO
Industrial applicability (IA)	Claims	1-12	YES
	Claims		NO

2. Citations and explanations:

Documents cited in the ISR

Document 1: JP 2003-306725 A (Zaidan Hojin Seisan Gijutsu Kenkyu Shoreikai), 31 October 2003, Par. Nos. 0008-0010, 0022-0027, 0029, 0036

Document 2: JP 2001-192748 A (NKK Corp.), 17 July 2001, Par. Nos. 0044, 0049, 0053-0056

The invention of claim 1 is disclosed in document 1 (Par. Nos. 0008-0010, 0022-0027) cited in the ISR, and does not appear to be novel or to involve an inventive step.

The invention of claim 2 does not appear to involve an inventive step based on documents 1 and 2 cited in the ISR.

The titanium production method disclosed in document 1, as disclosed in document 1 (Par. No. 0027), is a constitution wherein  $\text{TiCl}_4$  contacts a reducing agent by passing through an external circuit with the aim of obtaining high-purity titanium with no adhesion of impurities in the electrolysis solution, but because the technique of contacting by blowing gaseous  $\text{TiCl}_4$  into the reducing agent in the production of titanium is routinely used by parties skilled in the art, as disclosed in, for example, document 2, Par. No. 0044, using the routinely used technique of blowing gaseous  $\text{TiCl}_4$  into the reducing agent in order to obtain the desired purity in the titanium production method disclosed in document 1 would be easy for a party skilled in the art, and when doing so, in order to efficiently contact the  $\text{TiCl}_4$  with the reducing agent, blowing in the  $\text{TiCl}_4$  close to the negative electrode where the reducing agent is produced could be appropriately achieved by a party skilled in the art.

The invention of claim 3 does not appear to involve an inventive step based on documents 1 and 2.

Document 1 does not disclose re-using the chlorine gas generated on the positive electrode side.

However, document 2 (Par. No. 0049) discloses, in the production of titanium, using the chlorine gas generated on the positive electrode side for producing  $\text{TiCl}_4$ .

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

In fact, in light of the obvious problem of efficiently using waste materials, using the chlorine gas generated on the positive electrode side for the production of  $\text{TiCl}_4$  in document 1 would be easy for a party skilled in the art.

The invention of claims 4, 5 does not appear to involve an inventive step based on documents 1 and 2.

In the titanium production method in document 1, the titanium is recovered from the vessel.

However, in the production of titanium, because removing the titanium together with the molten salt and returning the molten salt to the reaction vessel after recovering the titanium is a method routinely used by parties skilled in the art, as disclosed in, for example, document 2, Par. Nos. 0053-0056, recovering the titanium in the titanium production method in document 1 by carrying out this routinely used method could be appropriately achieved by a party skilled in the art.

The invention of claim 6 does not appear to be novel or to involve an inventive step based on document 1 cited in the ISR.

Document 1 (Par. No. 0022) discloses using an electrolysis solution containing salts of sodium, potassium etc. as well as calcium chloride.

The invention of claim 12 does not appear to involve an inventive step based on documents 1 and 2.

Although document 1 does not specifically disclose the properties of the titanium produced, obtaining titanium particles with particle diameters of several dozen  $\mu\text{m}$  could be appropriately achieved by a party skilled in the art, as disclosed in, for example, document 2, Par. No. 0055.

The inventions of claims 7-11 are not disclosed in either of the documents cited in the ISR, nor are they obvious to a party skilled in the art.